REMARKS

In the Office Action dated April 28, 2002, the Examiner rejects claims 1-3, 5, 6, 19 and 20 under 35 U.S.C. § 102(b). The Examiner rejects claims 11, 12 and 20 under 35 U.S.C. § 103(a). Finally, the Examiner indicates that claims 4, 7-10 and 13-18 are allowable. With this Amendment, claims 1 and 20 have been amended, and no claims have been added or canceled. After this entry of this Amendment, claims 1-20 are pending in the application. It is respectfully submitted that for the reasons set forth hereinafter the Applicant's invention as defined by the claims is not anticipated or rendered obvious by the cited prior art either individually or in the combinations posed by the Examiner.

The Examiner rejects independent claim 1 and its dependent claims 2, 3, 5, 6, and 19 under 35 U.S.C. § 102(b) as being anticipated by Ciolli (5,573,472). These rejections are respectfully traversed. Claim 1 has been amended move to a feature from the preamble to the body of the claim. Specifically, the preamble no longer includes the feature that the motor includes, for rotary securing of the driven shaft especially when the electric motor drive is disengaged, a wrap-spring brake working against the gear box. This feature has been rearranged for clarity and no longer includes the unnecessary word "especially." Claim 1 now specifies that the tube motor includes a wrap-spring brake working against the gear box for rotary securing of the driven shaft when the electric motor drive is disengaged. The claim has also been amended to more positively recite the annular element. It is respectfully submitted that Ciolli fails to teach or suggest all of the features of claim 1.

The U.S. Patent and Trademark Office defines wrap-spring brakes in classification 192/223.4 as "[s]ubject matter wherein the device to retard or stop rotation of the output load is a helically coiled resilient element which expands or contracts radially to frictionally engage a member to be braked." Claim 1 makes it clear that the member to be braked is the driven shaft. Ciolli does not show a wrap-spring brake as known by those skilled in the art because the wrap spring 90' of Ciolli does not brake the shaft 26', i.e., it is not used for rotary securing the shaft 26'. As mentioned in response to the last Office Action, Ciolli uses a wrap spring in a downshift mechanism for dual speed/dual torque drive mechanisms. In operation, the wrap spring 90' is concentrically disposed about the spring drive drum 32'. (Ciolli, col. 8, ll. 40-41, 48-51). As the

drive motor 14 rotates in a clockwise direction indicated in Fig. 4, the wrap spring 90' unwinds and commences slipping on the spring drive drum 32'. (Id., ll. 52-54 and col. 9, ll. 10-14). At low torque levels, the wrap spring 90' locks the ring gear 66' to the shaft 26' through the wrap spring connection to the ear/lug 86'. (Id., ll. 14-17). This is the direct drive mode of the output shaft 50'. (Id., ll. 17-19). As the torque increases, the wrap spring 90' contacts the inner face of the spring sleeve 138 and the reaction sleeve 160, locking the spring sleeve 138 and the ring gear hub 70' to the reaction sleeve 160 on the housing 12'. (Ciolli, col. 9, ll. 19-33). The ring gear 66' of the ring gear hub 70' are stationary, so the planetary gear assembly 44' conventionally reduces the speed and increases the torque of the output shaft 50' relative to the shaft 26'. (Id., ll. 33-39). This is the reduced speed drive mode of the output shaft 50'.

The Examiner states that the ball bearing assemblies 156 and 38' are used with the wrap spring 90' for rotary securing the shaft 26'. However, neither the wrap spring 90' nor the assemblies 156, 38' stop the shaft 26' from rotating. The ball bearing assembly 38' allows the shaft 26' to rotate at a different speed from the output shaft 50' when the spring sleeve 138 and the ring gear hub 70' are locked to the reaction sleeve 160 on the housing 12'. The ball bearing assembly 156 allows the shaft 26' to rotate in the housing 12' during both the direct drive and the reduced speed drive operations. The shaft 26' can rotate in either direction without regard to the winding and unwinding of the spring 90'. For the foregoing reasons, Applicant's invention as defined in claim 1 and its dependent claims 2, 3, 5, 6, 11, 12 and 19 is neither taught nor suggested by Ciolli.

In addition to the reasons stated with respect to claim 1, from which claim 5 depends, it is respectfully submitted that Ciolli fails to teach or suggest the feature of claim 5 and its dependent claims 6, 11 and 12 that the planetary gear drive has a sun wheel as the gear input shaft. The Applicant agrees that Ciolli has a planetary gear assembly 44'. However, the planetary gear assembly 44' does not have a sun wheel, such as the sun wheel 28 shown in Applicant's Figures 1, 2 and 8. The gear input shaft of Ciolli is the input shaft 26', which is acknowledged by the Examiner. The shaft 26' is not a sun wheel, nor would it be obvious to include a sun wheel due to Ciolli's need to engage and disengage the ring gear hub 70' from rotating with the shaft 26'. Thus, the invention defined by claim 5 and its dependent claims 6, 11 and 12 is neither taught nor suggested by Ciolli.

It is additionally submitted that Ciolli fails to teach or suggest the feature of claim 6 that the planetary gear drive has planets, which roll off on the inner toothing on the inner side of the gear box. In Ciolli, the planet gears 62' of the planetary gear assembly 44' rotate with the gear teeth 68' of the ring gear hub 70' at low torque levels. (Ciolli, col. 9, ll. 14-19). At higher torque levels, the ring gear hub 70' is stationarily locked to the reaction sleeve 160 and the housing 12'. (Id., ll. 33-36). The wrap spring downshift mechanism 20' would not work without the presence of the ring gear hub 70' between the planet gears 62' and the housing 12'. Thus, in addition to the reasons set forth with respect to claims 1 and 5, from which claim 6 depends, Applicant's invention as defined by claim 6 is not anticipated or rendered obvious by Ciolli.

The Examiner rejects claims 11 and 12 under 35 U.S.C. § 103(a) as being unpatentable over Ciolli in view of Ozaki (4,587,450). It is respectfully submitted that the addition of Ozaki to Ciolli fails to teach the features of claims 1 and 5, from which claims 11 and 12 depend. Specifically, the combination fails to teach a wrap-spring brake that secures a shaft from rotating as defined in claim 1 and fails to teach a sun wheel as defined in claim 5 because neither Ciolli nor Ozaki teach these features. Thus, for the reasons stated with respect to claims 1 and 5, the combination of Ciolli and Ozaki fails to teach or suggest all of the features of claims 11 and 12, even if such a combination were taught or suggested by the art.

The Examiner rejects independent claim 20 under 35 U.S.C. § 102(b) as being anticipated by Ciolli (5,399,129). Claim 20 has been modified to clarify that the wrap-spring brake is for securing the driven shaft from rotating. Claim 20 also clarifies the feature of the annular element absorbing a moment of torsion resulting from the effort of the driven shaft to rotate opposite the direction of rotation of the electric motor drive by stating that the wrap-spring brake secures the driven shaft from rotating in that direction, that is, a direction opposite to rotation of the electric motor drive. The unnecessary feature that a gear input shaft is used to couple the drive shaft with a driven shaft has been removed from claim 20. It is respectfully submitted that Ciolli does not teach or suggest all of the features of claim 20. As discussed with respect to claim 1, Ciolli does not teach or suggest a wrap-spring brake that secures the shaft 26' from rotating. It is further submitted that Ciolli does not teach or suggest the feature of claim 20 wherein the annular element absorbs a moment of torsion resulting from the effort of the shaft 26' to rotate

opposite the direction of rotation of the electric motor drive, which is described as clockwise as shown by the arrow in Fig. 4. When the shaft 26' rotates in the counter-clockwise direction, the spring 90' tightens on the drive drum 32'. The overrunning clutch assembly 34' permits this counterclockwise rotation, absorbing the torque. (Ciolli, col. 9, ll. 39-53). The reaction sleeve 160 does not absorb this moment of torsion because the spring 90' does not expand when the shaft 26' is rotating opposite the direction of rotation of the electric motor drive. For the foregoing reasons, the invention defined by claim 20 is not anticipated or rendered obvious by Ciolli.

Finally, the Examiner rejects claim 20 as being rendered obvious by the addition of Shimanckas (3,669,058) to the preamble of claim 20, which is in Jepson form. The Applicant respectfully submits that Shimanckas is not art that one of skill in the art of tube motors would consider. First, it is submitted that Shimanckas is non-analogous art to the present invention. Shimanckas is directed to preventing back steering of an outboard motor, while permitting steering action in response to the operation of a user. (Shimanckas, col. 2, ll. 35-37). Shimanckas is accordingly classified in Class 440/55 Marine Propulsion, which is directed to significantly claimed vessel structure or a claimed modification of vessel structure regardless of the structure of the outboard motor, and specifically to restraining means for preventing the movement of the propulsion unit from its normal operating position. The present invention is directed to a wrap-spring brake in a tube motor. The Applicant identifies a problem in the prior art of tube motors as being the direct coupling of the wrap spring with the gear housing. There is no motivation to look to Shimanckas, even if Shimanckas were analogous art.

Further, even if Shimanckas were considered to be prior art to the present invention, the combination of the tube motor prior art of the preamble of claim 20 with Shimanckas would not render the present invention obvious because it would still fail to teach or suggest the feature of claim 20 of a wrap-spring brake securing the driven shaft from rotating. The Examiner states that the driven shaft is element 111, and states that it would have been obvious to combine the references for the purpose of absorbing a moment of torsion. It is respectfully submitted that element 111 is not a driven shaft of the motor. The releasing shaft 111 is operated by the user in either the clockwise or counterclockwise direction as shown in Fig. 2 to release the spring 57 to permit relative movement

between the king pin 27 and the propulsion unit 33 relative to the swivel bracket 17. (Shimanckas, col. 3, line 56 to col. 4, line 6). The wrap spring 57 is not used in a wrap-spring brake to secure a driven shaft from rotating. The wrap spring 57 is solely used to lock the king pin 27 to the swivel bracket 17 so that the propulsion unit 33 does not cause unwanted steering movements. Further, since the releasing shaft 11 actually releases the spring 57 from engagement with the swivel bracket sleeve 59, against which it is normally biased, (Id., col. 3, ll. 1-10), the sleeve 59 does not absorb a moment of torsion resulting from the effort of the releasing shaft 111 to rotate opposite a direction of rotation of the electric motor drive (not shown), whichever way that drive rotates at any particular point in time. Since the combination of Shimanckas and the tube motor described by the Applicant does not teach all of the elements of claim 20, even if such a combination were permissible, the combination fails to render the invention defined in claim 20 obvious.

It is respectfully submitted that the present amendment should be entered in the application under Rule 37 C.F.R. §1.116. The amendments to claims 1 and 20 do not raise new issues that would require further search or consideration and do not raise an issue of new matter. The amendments to claim 1 merely clarify the claim by reorganizing the existing elements. The amendments to claim 20 add the description of the wrap spring previously included in claim 1, clarify a feature of the annular element of the wrap-spring brake and remove an unnecessary feature. The proposed amendment does not present additional claims without cancelling a corresponding number of finally rejected claims, and the proposed amendment places the application in better form for appeal by the clarifications made. It is further submitted that the proposed amendments were not earlier entered because these cited references were not previously applied to the claims.

It is respectfully submitted that this Amendment traverses and overcomes all of the Examiner's objections and rejections to the application as originally filed. Reconsideration of the application as amended is requested. It is respectfully submitted that this Amendment places the application in suitable condition for allowance; notice of which is requested.

If the Examiner feels that prosecution of the present application can be expedited by way of an Examiner's amendment, the Examiner is invited to contact the Applicant's attorney at the telephone number listed below.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

1. (Three times amended) A tube motor with an electric motor drive with a drive shaft located in a motor housing, a reducing gear with a driven shaft coupled with the drive shaft via a gear input shaft, a gear box supporting the reducing gear and the driven shaft, [and, for rotary securing of the driven shaft especially when the electric motor drive is disengaged, a wrap-spring brake working against the gear box, characterized in that] the tube motor comprising a wrap-spring brake working against the gear box for rotary securing the driven shaft when the electric motor drive is disengaged, and an annular element mounted free of torsion on the gear box and positioned between the wrap spring and the gear box [is an annular element], which annular element diverts into the gear box a moment of torsion introduced by the driven shaft.

20. (Amended) In a tube motor including an electric motor drive mounted on a drive shaft and located in a motor housing, a reducing gear coupling the drive shaft with a driven shaft [via a gear input shaft] and a gear box supporting the reducing gear and the driven shaft, the improvement comprising:

a wrap-spring brake securing the driven shaft from rotating in a direction opposite a to rotation of the electric motor drive, the wrap-spring brake including:

a wrap[-]spring; and

an annular element fixedly mounted in the gear box and surrounding the wrap[-]spring, the annular element absorbing a moment of torsion resulting from the effort of the driven shaft to rotate opposite [a]the direction of rotation of the electric motor drive.